SCARLET FEVER.

A MONOGRAPH

ON

SCARLET FEVER.

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"Il n'est pas de maladie qui décontenance plus le médecin; il n'en est pas dans laquelle on soit plus sujet à tomber dans des erreurs de pronostic, et ces erreurs sont inévitables."

TROUSSEAU.

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Poughkeepsie, N. Y., *October* 20, 1859.

My Dear Barker:

Although I am not certain that you will agree with me in all the doctrines of this paper, I am sure you will allow me to inscribe it to you, in token of my regard for you, personally and professionally.

Believe me very truly yours,

E. H. PARKER.

To B. Fordyce Barker, M.D.,

President of the N. Y. State Medical Society;

Late Professor of Obstetrics in the New York Medical College, &c.

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Than Scarlatina, no disease calls forth from physicians a greater variety of opinions as to its pathology, its treatment, and especially its malignity. Some do not hesitate to say that they encounter it without fear, are sure of success in treating it, and only wonder at, if they do not openly blame, those who confess that they dread its approach, are constantly uncertain of its result, and not unfrequently lose their patients. It ought, then, to continue to be an interesting topic to medical men.

The three distinctive peculiarities of scarlatina which separate it from the other exanthemata (the fact of its being an exanthem distinguishes between it and other diseases) are the eruption, the sore throat, and the frequent pulse, and I therefore proceed to consider each of these separately.

I. *The Eruption.*—This is of a red color, varying from a pure and distinct scarlet to a color which has a decided brown, mixed with the scarlet. I do not intend to say that it is a deep and marked brown, but it can be imitated in water-colors, by adding to the vermilion

more or less of the yellowish-brown color, known as burnt sienna. The vermilion has to be *toned* by the sienna to produce it. This coloring of the surface is not caused by a smooth and equal injection of the superficial capillaries; and thus differs entirely from erysipelas, or any other inflammatory blush. It is caused by a true and proper eruption of a succession of points quite minute, but distinctly preserving a general conical figure, so long as they are not so much crowded as to become confluent. This shape can be seen when they are sufficiently isolated either upon the skin, or upon the mucous membrane of the mouth. As the disease progresses, and the eruption develops itself more and more fully, it loses its distinctness, either by the gradual expansion of the base of the cones, as may be seen in mild cases, or by the too near approximation of neighboring cones, crowding all into a uniform and confused flat mass. Still, in this case, there will be found to be some prominences, as if a few cones of unusual height still continued to project from the otherwise level surface; but they are few in number, as compared with the preceding abundance of them, though sufficient to give to the touch that sensation of roughness which is characteristic of the distinct stage.

The period at which the eruption makes its appearance is very variable. I have seen it quite apparent, and already becoming confluent, within half an hour of the time at which the patient first gave any signs of being ill; and I have seen cases in which it did not appear at all. As a general thing, however, it may be said that the eruption makes its appearance within forty-eight hours of the time in which the patient begins to feel unwell. The place in which it first makes its appearance externally is also inconstant. The neck and upper portions of the chest, the inside of the elbow-joints, the groins, and beneath the knee-joint, are the favorite locations, and in those it is to be sought. Before the appearance of the eruption in any of these places, it can often be seen upon the mucous membrane of the mouth, particularly that which covers the soft palate, and upon and about the tonsils.

The facility with which sufficient light can be thrown upon this surface to enable one to inspect it thoroughly, and the ease of the examination, leave no excuse for neglecting to look at it in all suspected or doubtful cases. There can rarely be any occasion for confounding it with the eruption of measles; which, although it may be seen in the same locality, is of a pink color, and presents in its patches the crescentic form. An intense tonsilitis may more reasonably lead to some doubt or confusion; but, although the tonsils are in both cases highly

colored, as well as the soft palate, a careful inspection will enable one to see that the scarlatinal throat is roughened by the eruption, while that of simple tonsilitis is highly injected, but smooth. But, wherever the eruption first makes its appearance, it increases, in cases of a typical character, (that is, in those which present no anomaly,) for two or three days in intensity, and then, gradually becoming duller and duller, fades away. During its increase, it gives an increased fullness to the whole surface, which is chiefly apparent on those parts which are of great mobility. Thus the cheeks are stiff, the eyelids are not precisely heavy, but feel thick when raised, the fingers when bent feel clumsy, and the hand seems to be covered on its palmar surface with a thicker and denser skin. As the eruption disappears, there is a corresponding disappearance of fullness; and when it has entirely gone, the shriveled appearance is quite as marked as was the previous swelling. Then the cuticle begins to separate, coming off in large pieces where it is thick and firm, as upon the palms of the hands and the soles of the feet; from both of which it sometimes separates itself in a mass, as it were a cast of the surface. From the body it falls off in a more pulverulent way; not, apparently, from any difference in the effect of the eruption upon the cuticle, but because the constant friction of the clothing reduces it at once to powder. Upon the completion of the process of desquamation, for which no definite period can be fixed, varying, as it does, with the intensity of the eruption and the vigor of the patient, convalescence is gradually established, and health returns to the patient.

II. *Of the Sore Throat.*—Mention has been made of the early appearance of the eruption in the fauces and throat. Corresponding with this is the fact that, from its presence, the contraction of the muscles of the throat becomes disagreeable, from a feeling of stiffness which results from it. But the tonsils are the portions most affected by the disease, and not only present the red appearance before described, but soon become enlarged, projecting into the throat, so as to interfere both with deglutition and phonation. It is, in fact, often easy to tell what is the condition of the tonsils as to size, before examining the throat, merely from the change which they produce in the voice. When much enlarged, the effort to swallow produces severe pain, which is referred directly to the region of the tonsils as its seat. Still, there is not usually at this period any ulceration of the tonsillar surface, to which, by its contact with the fluids or solids attempted to be swallowed, the pain can be referred. Externally, these glands are felt very distinctly, and pressure upon them causes pain. In typical cases, pure

and simple, the redness, the swelling, and the painful deglutition continue for about a week, when they gradually lessen and pass away. But in many other cases, ulceration of the tonsils occurs, sometimes to a fearful extent, grayish-white patches present themselves upon other portions of the mucous membrane, or a proper diphtheritis sets in, greatly periling the life of the patient. But these will be spoken of elsewhere as complications.

III. *Of the Pulse.*—More constant and reliable intimations of the presence of scarlatina may be derived from the pulse than any other single symptom. From the first, it is remarkably frequent, rising in the adult to 120 beats a minute almost with the first signs of illness, and soon reaching, in some cases, 140 or 150 beats. It is by no means the pulse of inflammation, but is quick, almost irritable, as if there were an excessive exaltation of the innervation of the heart. It is easily obliterated by pressure, never forcing its way under the finger against decided resistance, but instantly returning with its quick, sharp motion, when that pressure is lessened. When both the eruption and sore throat are absent, as is sometimes the case, the pulse will, by these characteristics, give quite reliable indications of the disease; while the absence of these peculiarities of the pulse will often enable one to avoid mistaking a cynanche, or a roseola, or even a rubeola, for scarlatina. It is hardly necessary to say that an early and accurate diagnosis is often of material importance, not only for the reputation of the physician, but for the safety of others who may be exposed to the contagion, or to allay the fears of anxious friends.

Accompanying this condition of the pulse, we have a dry, hot, pungent-feeling skin, which gives to the hand, firmly applied to it, a sensation which might almost be said to be tingling. It is similar to, though more pungent, than that felt when the hand is placed upon the thorax of a patient suffering from a violent pneumonia.

I proceed to fill up the portraiture of the disease, the outline of which has thus been sketched.

The most common subjects of this disease are children under twelve years of age; those who have gone beyond that time without suffering from it being less and less liable to an attack, as their age increases. Something of this immunity from age alone is probably due to circumstances, and more apparent than real. In this country, at least, few persons live twelve years without being exposed more than once to an epidemic of scarlatina. If, then, at that age, one has not had that disease, the probability is that he is not so susceptible to it as are the majority of children. And yet, two facts seem to show that when

there has been no previous exposure of persons arrived at adult age, they are not so liable to be attacked by an epidemic as young children. The first of these facts is drawn from a paper by Dr. William Douglass,* describing what appears to have been the first epidemic of this disease in New England, and probably the first in this country. Dr. Douglass says, that "in November (1735) it spread considerably in Boston, especially among children," while throughout the whole paper the patients are usually spoken of as children.

The second fact is drawn from a statement made by Dr. Copland, at the meeting of the Royal Medical and Chirurgical Society, held at London, on the 10th of November, 1858, when scarlatina was the topic under discussion. That gentleman stated, that of the patients who had scarlet fever at the Cape of Good Hope, which had not previously been visited by the disease for twenty-three or twenty-five years, "many had arrived at adult age."† It may here be noted, that of adults it is especially apt to attack pregnant females, and is attended with unusual danger to them, causing a premature expulsion of the fœtus, and frequently the subsequent death of the mother.

Scarlatina resembles the other exanthemata in that it *usually* occurs but once in the same patient, but is also like them in that it may recur once and again, even after the first attack has been marked with a good degree of severity.

So many instances may be found in the practice of almost every one, proving that scarlatina is communicable from one individual to another, that it is unnecessary to quote illustrations of it. It is admitted as a fact. That it may be conveyed in clothing is not so generally admitted, and yet my own opinion is very decided, that it may be so communicated. As illustrations of this, reference may be made to a fact which Dr. J. K. Mitchell, of Philadelphia, was accustomed to quote in his lectures. A frock, which belonged to a little girl who was sick with scarlet fever, was sent to be tried on by another little girl, whose mother borrowed it for that purpose, being ignorant of the illness of her friend's child. Without any other known exposure, the

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* "The Practical History of a new Epidemical Eruptive Miliary Fever, with an Angina Ulcusculosa, which prevailed in Boston, New England, in the years 1735 and 1736. By William Douglass, M.D., Boston, N. E. Printed and sold by Thomas Fleet, at the sign of the Heart and Crown, in Cornhill, 1736." This paper has been republished by Dr. Caspar Morris during this year, 1858, as an appendix to the new edition of his valuable Essay on Scarlet Fever, and is well worthy a careful study.

† *Medical Times and Gazette.* London, Nov. 20, '58, p. 535.

second girl, in a few days, broke out with the same disease. I am quite confident that there was no epidemic prevailing at that time. A more marked instance has been communicated to me by a medical gentleman, in whose family it occurred. A servant left his house to attend upon the children of her sister, who were ill with scarlatina. After they had recovered she returned to his house, remaining but a few days, and leaving, upon her second departure, a bandbox in the room which she had occupied. Mrs. —— opened the box to see what it contained, and, finding that it was the servant's clothes, immediately closed it again. In a few days Mrs. —— was attacked by scarlatina. The clothes, upon subsequent inquiry, proved to be the dress which the servant had worn while acting as nurse with her relatives, and which had been packed up by her without any washing, or even airing. Mrs. —— did not touch the clothes, and kept the box open only a moment; but being very near-sighted, was compelled to bring her face close to it, to ascertain its contents. There had been no other exposure, for the disease was not epidemic at the time, and she knew no families in which it could have been communicated to her. It is proper to add, that her husband, Dr. ——, was not engaged in the practice of the profession, and the disease was not brought home by him.

It is probable that scarlatina occasionally springs up anew without the previous existence of the disease from which it could have been generated. A fact within my own knowledge, in which, in three successive years, children of families living in adjoining houses were in the same month of each year attacked by the disease, seems to suggest that there may have been some telluric or atmospheric condition which required only the ripening influences of the month of May to bring forth its fruit in disease. The many possibilities of error in the case, especially as to any contagious communication, forbid argument from it. Dr. Douglass, in the paper which I have already referred to, says, in speaking of the epidemic which was observed by him, "This distemper did emerge 20*th May*, 1735, *in Kingston Township*, 50 miles eastward from Boston; it was no foreign importation, Kingston being an inland place, of no trade or considerable communication."*

The period of incubation of this disease is very uncertain: in some cases it appearing to be only a few hours; in other cases, many days. One of the most striking illustrations of this is given by Dr. Jacob Bigelow, of Boston. In one of the notes appended to his paper on

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* *Op. cit.*, p. 178.

self-limited diseases, that writer says: "I knew a patient to be taken with scarlet fever in forty-eight hours after arriving in this country, by a passage of forty days from Europe. In this instance, as no case existed in the ship, the latent period must have been less than two days, or more than forty."* As a general rule, it is safe to say that, if an exposure to the disease is known or suspected, and a fortnight has since passed without the appearance of the eruption or other symptoms, all apprehension of danger may be laid aside.

The first manifestations of the disease are, usually, sickness at the stomach and vomiting, frequently occurring very suddenly, and without premonition. Thus, a child may awake from a quiet sleep and immediately vomit, the other symptoms following in rapid succession. Headache may precede, accompany, or follow the vomiting, it rarely being absent. The pulse is almost immediately found to be frequent, and to present those characteristics which have already been mentioned. The skin becomes hot and pungent, and may even then, if carefully examined, be found to present the eruption. The fauces may also participate in this condition, and not only be dry, but so swollen and tumefied that deglutition is seriously embarrassed. Occasionally, the stiffness of the throat and difficulty in swallowing will appear before any of the other symptoms. Delirium is often observed from the very first appearance of the disease; and scarlatina is, in this respect, peculiar among the exanthemata. This "wandering" of the mind will not usually be apparent, in the early stages of the disease, while the patient is fully awake, but during his sleep, and especially when waking from sleep. It is a delirium of *talking*, rather than of *doing*. When first aroused from sleep, the patient is loquacious, using the most inappropriate words, or talking of very different subjects from those on which he is questioned. In a moment or two, if fully awake, this usually passes off, and he is found to be in the entire possession of his faculties.

The condition of the tongue is of great interest. More reliance has, however, been placed upon its changes than is safe or correct. At first, a thick, white coat spreads over the surface. This is soft, moist, and pasty. After a longer or shorter time, (in one case a few hours, in another a day or two,) red points begin to show themselves through the white coating. These are the elongated and nude papillæ, and by their position give to the surface a striking resemblance

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* Nature in Disease, illustrated in various Discourses and Essays. By Jacob Bigelow, M.D., &c., &c. Boston: Ticknor & Fields, p. 45.

to that of the white strawberry. As the case goes on, this white coating separates itself, and, disappearing, leaves the tongue of a scarlet hue, rather dry, and with the papillæ still very apparent. The resemblance is now to a red strawberry, though, to my own eye, it is not quite so striking as that to the white. The diagnostic value of this appearance has been overestimated. The projecting papillæ are not unfrequently seen protruding through a white coat in gastric and enteric fevers. While writing, I have under my care a child with gastric fever, whose tongue resembles a red strawberry, though its color is not quite so bright as in scarlatina.

As to the bowels, there is sometimes a decided constipation; at other times there is a diarrhœa. This variation is important, and to be remembered; for cathartics, and especially active ones, are by no means to be used indiscriminately. The prostration produced by them sometimes adds fearfully to the dangers of the disease.

Thus commencing, scarlatina goes on in a constant manner. The eruption increases in its extent until the whole surface is covered, and deepens in its color until the disease begins to decline. At this time the fever diminishes, the pulse becomes less frequent, the heat abates, the thirst lessens, and the whole condition of the patient improves. The throat, however, continues to be painful for some time after there has been a decided amelioration in all other respects. The delirium, which increases at night so long as the fever increases, and, in cases of a grave character, may be continuous through the day, lessens as the disease abates, but still occurs occasionally at night, till convalescence is fairly established.

Thus I have sketched what may be termed a typical case of the disease, one presenting all its characteristics, and terminating in recovery, without any hindrance to its regular progress. Now, it is necessary to say that such cases are comparatively rare. This regular beginning, rise, progress, and decrease are often seen, but much more frequently there is some departure from this course. These variations, these departures, may be in any part of the disease, and in every particular, from the beginning to the end of the attack. Many are the instances, not only where death has occurred in consequence of them, but, when this has not happened, they have changed the whole life's prospects.

I proceed to sketch those variations which are common and important.

First. *Of Variations which concern the Eruption.*—The fact has already been alluded to, that the eruption does not appear at all in

some cases. These, however, are not of necessity mild in their character, or happy in their end. A most striking illustration of this is hus given by Prof. Trousseau, in his lecture on scarlatina. The patient was "a young American girl in a school at Paris. She had been affected since morning by an alarming delirium. She had an intense fever, and incessant vomiting; the pulse was so frequent that it could not be counted; the skin was remarkably dry. These phenomena caused me to say, when we reached the bedside of the patient, that it was scarlatina; and, in fact, although nothing else demonstrated its existence, my diagnosis was confirmed by the presence of the characteristic eruption upon another young girl of the same school, where an epidemic of scarlatina prevailed. Our patient died before the end of the day." Cases in which the eruption is absent are to be watched for a length of time after recovery appears to be established; for there may arise some of the dangerous sequelæ of the disease, even when they are not anticipated.

The eruption often appears partially; that is, without covering the whole of the surface, but only portions of it. Such cases are ordinarily accompanied by grave symptoms, and this irregularity of eruption is often considered a very grave sign. My own experience, however, does not confirm this opinion. I have seen quite a number of cases in which the progress of the disease has been perfectly simple, though the eruption presented this irregularity. It is generally about the joints and on the side of flexion that these patches present themselves. Especially do they prefer the large joints, the knee, and the elbow, about which they extend in an irregular form; though chiefly upon the more delicate skin, on the under and inner sides respectively.

When the eruption, whether local or general, has, instead of the pure scarlet, the burnt sienna tinge, of which I have before spoken, the case may be considered as a grave one, if in its earliest stages. When the eruption is fading the appearance of this shade is comparatively unimportant, though in this case it is well to be on the guard against sudden and excessive prostration. But it is sometimes noticeable from the first breaking out, and when seen at this period indicates to the physician the necessity of great diligence and watchfulness, for he has to contend with a fearful disease.

Second. *Of the Variations in the Condition of the Throat.*—Many of the cases of scarlatina resulting fatally do so in consequence of changes carried on in the throat, and these changes are among the most difficult to be treated. Instead of the simple swelling of the

tonsils, the stiffness of the muscles surrounding the fauces, and the scarlet color of the walls of the pharynx, we may have a dirty-white, pultaceous deposit upon the surface of the tonsils, or mucous membrane, or both, and the stiffness may amount to an almost complete rigidity of the jaw and throat. Upon removing this deposit from the surface of the mucous membrane, we find no particularly striking appearance beneath it. The surface is red, like the rest of the membrane; possibly a little smoother. On the tonsils there is often found to be underneath it an ulcerating surface, making excavations into the substance of the gland. The exudation may extend, and unless measures are taken to prevent its doing so, is very prone to extend over the soft palate, (being almost certain to appear on the extremity of the uvula, even when it does not cover the rest of the palate,) up to the posterior nares, towards, if not into the Eustachian tubes, and down the pharynx. It is a point of great interest that *this* exudation does not tend to enter the larynx. Why it is so is uncertain, though probably due to the differences in the epithelium of these parts. The fact, however, remains. But let me not be misunderstood. An exudative inflammation, possessing some of the characteristics of this variety, does invade the larynx, but the two are to be distinguished from each other.

The history of the second variety is usually this: The patient in the commencement of the disease has no other than the ordinary symptoms, at least so far as the throat is concerned, and goes on towards an apparently rapid convalescence, when, just as this is expected, the soreness of the throat increases, the pulse resumes its frequency, but is weaker than before, there is a distinct swelling of the neck externally, and internally a blackish-colored deposit is visible upon the fauces. The breath becomes offensive, the prostration extreme. Soon a thin, sanious, irritating discharge oozes from the nose, excoriating all the surface on which it flows. *This* exudation will take its way into the larynx, not always, but inclines to travel in that direction. It is scarcely necessary to add that, under these circumstances, the patient's life is in very great danger. The physician has, in fact, to contend with *diphtheritis*, and in a patient below *par* as to his strength and vitality.

This, like the milder exudative inflammation, may extend in all other directions along the continuous mucous surface, but wherever it goes its effects are much more serious. Sight, smell, hearing, and even taste, have been destroyed or impaired by it, and still life has been spared.

It is to be regretted that it is so much the custom to speak of this condition as being *croup*. There is indeed a covering of exudation upon

the mucous membrane of the larynx, and perhaps the upper part of the trachea; but it is soft, easily wiped off, not at all firm and consistent, and very rarely, if ever, endangers life, by blocking up the air-passages. The danger is from the overwhelming prostration—the effect of the disease directly upon the vital energies of the patient, not of an impeded or deficient aeration of the blood. Under these circumstances, it is as unfortunate as it is erroneous to call the disease croup, carrying with it, as that name usually does, a depressing and perturbing treatment.

I have dwelt upon these different characteristics in the exudations, because, although it is some time since they were first pointed out by Trousseau, they have not been generally recognized by the profession, and yet I am certain from my own observations that the distinctions are well and properly drawn.

Both of these exudative inflammations may interfere with the hearing, either temporarily or permanently. The temporary interference is due in part to the congestion and slight tumefaction of the lining membrane of the Eustachian tube and inner ear, tending to close that passage; and in part to the same effect resulting from the accumulating exudation. But the permanent deafness is due to more serions orgauic changes. In some cases of the diphtheritic exudation, there appears to be entire destruction of the auditory apparatus, but it is usually the perforation of the membrane of the tympanum that causes the deafness. Our asylums for the deaf and dumb bear abundant evidence to the frequency of this occurrence. I shall avail myself, however, of an interesting paper lately published* by Dr. E. H. Clarke, of Boston, upon perforation of this membrane, to illustrate this point. Of fifty-two cases collected by him, in which the membrana tympani was perforated, in nineteen it was attributed to scarlatina. In all but five of these there was perforation of the membrane in *both* ears. Of the whole number collected by Dr. Clarke, (52,) the cause was unknown in fifteen. If these be excluded, we have remaining thirty-seven cases, in eighteen of which scarlatina caused the perforation; and in one, one ear was perforated in consequence of this disease, and the other by another cause. Thus only eighteen cases are left out of thirty-seven in which perforation was known to be due to other causes than scarlatina. Omitting the case which presents two perforations, one from scarlatina, and one from another cause, and we have eighteen cases attributed to scarlatina, and eighteen to other causes. Now in the first,

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* *American Journal Medical Science*, Jan., 1858.

or scarlatinal eighteen, there were thirty-two perforations, (that is, in fourteen of the cases the membranes of *both* ears were perforated;) while in the second, or miscellaneous eighteen, there were twenty-three perforations, the double perforation existing in only five cases. The fifteen cases which I have excluded in the preceding estimate, in consequence of the cause of the injury being unknown, gave double perforation in only three instances; so that, although there may be some cases among this number caused by scarlatina, there is no comparison for seriousness with those authoritatively attributed to this exanthem. The miscellaneous causes were cold, syringing the ear, measles, pneumonia, typhus fever, pertussis, eczema, puncture, salt-water bath, and teething.

It is in connection with the diphtheritic exudation that we have the formation of cervical buboes. The glands principally affected are those of the deep-seated chain of lymphatics. The swelling and pain caused by them are different from the swelling and hard infiltration of the superficial tissues of the neck. There is not the same tense, solid surface, which to the touch resembles so much the outside surface of a piece of salted pork. The bubo is felt to be underneath the skin and deep fascia, is limited in its dimensions, being usually defined with ease, and is often intensely painful. If the inflammation of the gland goes on to suppuration, the usual signs of such changes are present.

Third. *Of Variations which involve the Nervous System.*—When the nervous system is, so to speak, the centre of attack selected by the disease, the case becomes at once most serious. The severity of this attack may vary from the slightest disturbance to the complete overwhelming of its functions, when a speedy death ensues. I do not now speak of that delirium which has already been described as existing in many cases which may be classed as typical.

In some cases the first symptom of the disease is a violent convulsion, which may be followed by a regular course of the disease, there being no other variation from a typical case. As this is not always so, the occurrence of a convulsion justifies a guarded prognosis, and should lead the physician to watch the patient closely.

But there is another class of cases, not very rare, present to a greater or less degree in every severe epidemic, and which require prompt action, if anything is to be attempted for the benefit of the patient. In referring to those cases in which the eruption does not make its appearance, I have quoted one case of this class from Prof. Trousseau. Here is another from the same authority: "In 1824, at the commencement of that disastrous epidemic which broke out in

Tours, of which I have spoken, we saw, with M. Bretonneau, a young woman die in less than eleven hours, with terrible symptoms—delirium, excessive agitation, extraordinary frequency of pulse; and nothing indicated scarlatina to us, excepting that we were in the midst of an epidemic, and that many persons in the family of this young woman had had it."

A case similar to this in some respects, though differing from it in others, lately occurred in my own practice, and will serve to illustrate another phase of this mode of attack.

On Sunday evening I was called to see a lad, about 12 years old, at a boarding-school. He was dead when I arrived, (a few minutes after I received the summons,) and I obtained this history of the case: On the morning of the preceding day (Saturday) he had not appeared to be well. Some simple domestic remedies were administered, but he grew worse, and the usual medical attendant of the school was sent for. It was eleven o'clock in the evening before Dr. M. saw him, when he found the eruption of scarlatina covering the whole surface, but the patient in as favorable a condition as he could expect. The throat was not very sore, and there was no particular complaint of headache. Directions for the night were left by him, and in the morning (Sunday) he saw his patient again. This was about eleven o'clock. The eruption was then fully out, rather intense in its color, which was a bright scarlet, and the other symptoms the same as at the preceding visit. He left him without any grave anticipations. The patient was carefully watched during the day, an assistant teacher being almost constantly with him. His delirium was slight, his mind wandering chiefly to his studies, of which he was fond, and in which he was remarkably advanced for his age. In the afternoon he was quiet, and about six o'clock in the evening attention was drawn to his being so still. He was found to be just breathing out his last. The body, when I saw it immediately afterwards, was lying in the position of one quietly sleeping. There was no indication of convulsions having preceded death, and I had the assurance of the intelligent attendant that there had been none. In this case, death occurred in less than 36 hours from the time at which the boy was first noticed to be ill.

A case of a similar character, though more protracted, I also give from my own experience. The patient, a child three years and a half old, began to vomit upon waking at his usual hour on Sunday morning. He threw from his stomach undigested food, taken early the previous evening, and seemed relieved. Within half an hour, however, the scarlatinal eruption was observed about the chest and joints, and the

headache, hot skin, and frequent pulse at once developed themselves. On Saturday the patient had appeared to be perfectly well, and had taken a very long walk with his parents. No suspicion of his being ill was in their minds till he vomited. During Sunday the eruption continued to spread from the localities in which it first appeared until it covered the whole surface. It seemed to promise to be a regular case in its progress, though a severe one. There was no delirium, no subsultus tendinum. On Monday it began to be rather difficult to arouse him, and there was marked delirium when aroused. An occasional sigh in the respiration attracted notice, and was thought to justify an unfavorable prognosis. On Tuesday there was more marked coma, the sighing was more frequent, and deeper. Some subsultus tendinum was apparent. There was but little sore throat. The sienna tint of the eruption, which was noticeable on Monday, grew deeper; the teeth and tongue were covered with a brownish crust, and all of the symptoms were aggravated. During Tuesday night the coma increased, and the patient died quietly, and without convulsion, early on Wednesday morning.

In all these cases the nervous centres are the points on which the disease makes its assault. They are, so to speak, overwhelmed by the poison of scarlatina, whatever that may be, and the patient dies, not from any organic lesion, so far as can be discovered,* but from interference with the functions of these centres, upon which life depends.† The succession of phenomena, especially as seen in cases similar to that which was last described, reminds one of the progress of symptoms in a patient who is being brought under the influence of anæsthetics, and it seems to be a proper conclusion that the interference with the functions of the brain is in the same order of sequence, death occurring when the medulla oblongata has yielded to the poison.

It is not in itself, and its accompaniments, that scarlatina is alone fearful; but also in the diseases which follow in its train. These re-

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* Dr. Jacob Bigelow, (*op. cit.*, p. 44,) after referring to three post-mortem examinations of such cases—one in his own practice, and two in that of his friends—says, "in these cases the poison of the disease seems to destroy life, without exciting inflammatory action."

† Dr. William Douglass, (*op. cit.*, p. 181,) makes three classes of varieties in this disease; the first he describes thus: "Those who die the first, second, or third day of illness, by an irremediable necrosis of the œconomy: in such the seizure is generally sudden: a sinking pain in the stomach, an extreme prostration of strength, a titubating, low pulse; in some a stupor; in others a delirium; in some children convulsions: and all of them generally die dozie."

ceive the name of *sequelæ;* and, as generally enumerated, are, some of them, simply the continuance of diseases present with the fever, but which have not disappeared when that abated; while others are new diseases following the fever, but not existing while that was present.

In the first of these classes may be enumerated the affection of the temporal bone, whether in its petrous portion, or in its mastoid cells and process, which sometimes is the result of the invasion of the ear by the diphtheritic inflammation. The destruction of the membrane of the tympanum is not uncommon in the progress of the disease, and is frequently accompanied by the discharge of the auditory ossicula. But when the disease has extended still further, necrosis of the bone is the result, and its removal by the processes which nature sets up for that purpose must take place. This tediously slow removal of the dead bone continues to go on long after every other sign of the fever has disappeared; so that though, in its commencement, synchronous with the scarlatina, it may by its presence, for months, and even years, bear witness to the presence of that disease.

The cervical buboes, which have been spoken of in another place, may also be classed with propriety under the same head. It is comparatively rare that they go on to suppuration, till after the fever has begun to decline, if not to disappear. They may then drag along a slow course, discharging pus for a long time if neglected, and with the continued effect to keep the patient weak and prostrated.

Rheumatism may be enumerated as a disease properly following scarlet fever; that is, it should be classed in the second division of the sequelæ. It is of frequent occurrence, usually is not severe, and on this account may be overlooked, though it is important that it should not be. That patients usually recover from it is a great satisfaction to the physician; but, unfortunately, this very thing may blind him to the grave changes which sometimes result from it, and which need to be encountered at their very commencement. Pericarditis, endocarditis, and pleurisy, may be its companions, and results; while at other times it causes suppuration within the joint which it has attacked, destroying its usefulness, if, indeed, it do not kill the patient. An endocarditis, which has been unnoticed, may be the origin of lesions within the heart, which are not fatal for years. A neglected pericarditis will produce permanent injury of the heart, which, though not of necessity fatal, may make life a burden. There is sufficient authority for saying that suppuration may also take place within the pericardium. When inflammation of the pleura occurs, there is a marked tendency in it to pass into the suppurative stage. Thoracentesis may

be required to remove the pus; but, although there should be no hesitation in performing the operation when it is necessary, it should be remembered that it may leave a fistulous orifice, which will require a long time to heal it. All of these affections may be grouped together, as having a common origin, and consisting in inflammations of serous tissues, for the rheumatism is almost invariably articular. It may be added, that they are not more frequently met with, after severe attacks of scarlatina, than after those which are of a typical character, or even milder than these. The period of desquamation is that in which these diseases are apt to appear.

It is at the same period, and in the same class of cases, that we most frequently meet with a sequela more commonly recognized, and anticipated. I refer to anasarca, with or without dropsical effusions into the serous cavities. More or less complete suppression of urine accompanies this disease, and is sometimes the first indication of changes in the kidney, similar to, if not identical with, those of Bright's disease. But there is no satisfactory evidence that such changes have of necessity taken place previous to the appearance of the anasarca.

The position of the patient has much to do with the locality in which the œdema first attracts attention. In a child that is running about, there will first be a little swelling of the feet and ankles, which by the characteristic pitting, upon pressure, gives distinct proof of fluid in the areolar tissue. This may increase very rapidly, and within twenty-four hours seriously interfere with the movements of the limbs. But if the patient has been confined to the bed, the loose tissue of the eyelids will be first infiltrated, and become puffy, the difference being entirely dependent upon position, and not upon the character of the disease.

The history of these cases of anasarca usually runs in this way: After an attack of scarlatina, mild in every respect, there is, during the period of desquamation, a sudden diminution of the quantity of urine, (what little there is being sometimes tinged with blood,) accompanied by more or less swelling of the feet, legs, and hands. This swelling extends to the body and face, until the patient presents the ordinary pale, bloated, doughy look of general anasarca.

In the majority of instances, with proper care, the anasarca passes off, and the patient is restored to health. At other times, these symptoms are accompanied by grave structural changes in the kidneys, which in time, and it is sometimes after years have elapsed, destroy the life of the patient. In other cases, which fortunately are not common, convulsions suddenly occur, and are the first indications of cere-

bral difficulties, which usually terminate fatally. When pain in the head and loss of sight occur in a patient with anasarca, convulsions are to be feared, and active measures should be taken to ward them off. Care is necessary, however, that a mistake should not be made, by confounding uræmic convulsions, arising from the deficient secretion of the urea, with those which result from effusion upon or within the brain, the result of inflammation of its membranes.

Taking cold, imprudent indulgence of the appetite, or some other similar irregularity, is often pointed out as the cause of the anasarca; but it must be admitted, that it occurs in patients who have been the most carefully and the most successfully guarded from all such influences. And it must at the same time be confessed that the pathology and etiology of the mild cases, especially, are obscure. The statement has been made that albumen is found in the urine of one out of every three scarlatinal patients, if the disease is well marked during the period of eruption; and this, together with the occasional occurrence of hæmaturia at the same period, would seem to point to the kidneys as especially susceptible to the influence of the scarlatinal poison. It is thus very evident that the careful practitioner will give constant attention to the condition of this secretion from the beginning to the end of the attack, and that whether the case is mild or severe.

I come now to speak of the treatment of scarlatina; and first, *of prophylaxis*. The first duty of the practitioner, when this disease makes its appearance in a family, is to guard those who never had it from any further exposure to its contagion. So long as there is any possibility that it may be conveyed by *fomites*, it is necessary to guard against them, as well as against direct communication with the patient. Seclusion of the invalid in a well-ventilated room is least apt to interfere with the usual routine of the family. To this room only his attendants should have access, and these, while avoiding as much as possible all intercourse with the rest of the household who have not had the disease, should take especial care not to caress the other children, nor to take them in their arms, even when it is necessary, until they have gone out of doors, and exposed their hair and clothes freely to the air. Washing the hands is also wise. The contagious influence seems to be easily destroyed in these ways, which indeed ought to be insisted upon, were there only a slight *possibility* that it could be thus removed. It is in those instances in which the first cases are mild, that parents and servants are, with the greatest difficulty, induced to institute this rigid quarantine in the house; but because the first case

is mild, we cannot presume that others will be so too, and these rigid rules should be firmly insisted upon.

Belladonna has acquired some reputation as a preventive of scarlatina. By some, its powers are insisted upon and praised; by others, they are denied and ridiculed. There can be no question that the fact of its having been introduced to the notice of the profession by Hahnemann has added to the prejudice with which it is received. Still, whatever effect this introduction ought to have had, it has been used by large numbers of physicians; and so much testimony* has been given in its favor, that there is no excuse for omitting its use. In my own experience, I have not been able to satisfy myself of its efficacy, being conscious of the many sources of fallacy which one has to avoid in establishing such a therapeutical fact. But my reasons for using it are:

1. If it has any protective power, those who have trusted themselves to my care ought to have the advantage of it.

2. It does no harm.

3. There is no more reliable or safe prophylactic.

4. It is often a great comfort to the parents or other friends of those who have been exposed to scarlatina, to feel that they are doing something to combat the inception of the disease, instead of idly awaiting its onslaught.

5. I thus protect myself from those harpies who are ever on the watch to bury their filthy talons in one's reputation, and who, if it were omitted, would not hesitate to say, if the disease spreads in the family, that it might have been prevented, had I not been careless, or ignorant of the use of this drug.

The most convenient formula for its use is—

℞.—Belladonnæ extracti, gra. iij.
Aquæ menth., f. ʒj.

For an infant under one year of age, give three drops, twice a day; and for older children, add to each dose one drop for every year in their age above the first.

Of the Treatment of Typical Cases.—It is to be remembered that scarlatina is in its nature a self-limited disease; that is, if this term be

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* Thus, Bouchut, who favors its use, quotes, as agreeing with him, Schenk, Massius, Hufeland, Berndt, Meglin, Bayle, Godelle of Soissons, and Stevenard of Valenciennes. Bayle says (*Bibliothèque de Thérapeutique*) that, in an epidemic of scarlatina, out of 2,027 persons who took belladonna, only 79 were attacked by it. See, also, an interesting report on its use in the *Am. Journ. Med. Science*, by Dr. J. C. Morris, of Philadelphia.

objected to, it has a certain rise, a fixed course, and an early and regular decline; so that, if not exaggerated or aggravated by some of the variations which have been enumerated, it terminates in recovery in from ten to fifteen days. It becomes evident, therefore, that, in those cases to which I have given the name of typical cases, the interference of active medication is not only unnecessary, but undesirable. A mild emetic will clear the stomach of undigested food, and is often thought to hasten the appearance of the eruption. If constipation is marked, and continues for thirty-six or forty-eight hours, a dose of syrup of rhubarb for a child, or of the tincture of the same drug for an adult, will move the bowels gently, and be all that is necessary. If diarrhœa comes on, as it often does at an early period, chalk mixture and catechu, with a little opium, may be used, in sufficient quantities to control it. For children paregoric is preferable to other opiates; but with adults either this or laudanum may be used, or the opium may be given separately, in the form of Dover's powder. As a febrifuge, either the sweet spirits of nitre, or spiritus mindereri, or tincture of aconite, can be used in appropriate doses. An occasional sponging of the surface of the body with tepid water, a little vinegar being added to it, if preferred, seems to moderate the excessive heat, and to allay, in good measure, the nervous irritability which arises from or accompanies it. It is of great importance that the room of the patient should be kept quiet, all visitors being excluded; well ventilated, provision being made for the direct access of fresh air at all seasons of the year, but of course not in such a way as to create draughts across the patient; and shaded, not absolutely dark, but with the glare of light excluded. The patient will thus be freed from much of the suffering from headache, which is one of the greatest annoyances.

The throat, in these cases, requires nothing more than a mild alum or capsicum gargle,* to be used three or four times a day; and the external irritation of a piece of flannel around the neck, the irritating power of which may be increased by occasional wetting with diluted rum, in which a little black pepper has been steeped. If the white pultaceous deposit is visible within the throat, it is well to wipe it off with a soft sponge, or with soft linen, and immediately apply to the surface a solution of chloride of soda. If the patient makes a great

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* The domestic formula of a tea-spoonful of black pepper, a tea-spoonful of salt, a table-spoonful of vinegar, and a pint of hot water, is a very excellent one for a gargle.

deal of resistance to having the deposit removed, it is not best to excite him by forcing him to submit, but either to apply the solution without removing the membrane, or allow him to use it as a gargle, if he is old enough to do so. Mr. Fuller recommends a chlorine draught, which I have not had occasion to use, but which must be well adapted to many of these cases. His directions are, to "put 10 grains of chlorate of potash into a pint bottle, add to it half a drachm of hydrochloric acid, cork it lightly, and let it stand half an hour; then add by degrees a pint of water, shaking it well on every addition, to make the water absorb the gas, and add one ounce of syrup of orange-peel. The dose is a tea-spoonful, more or less, according to the age and condition of the patient."

As to the diet of the patient, little food will be required while the fever runs high. Light gruels and toast-water are all that will be relished, and more substantial food is apt to produce nausea. But when the fever has disappeared and desquamation has fairly commenced, the appetite returns, and soon becomes ravenous. Light and easily-digested food should be given in moderate quantities, and this limit should not be passed, though the patient does beg for more. I have seen even adults beseech their friends with tears to satisfy their cravings; and it is necessary to impress upon those having charge of convalescent patients that danger is imminent, if strict attention is not given to regulating the diet. During the continuance of the fever, cool drinks, slightly acidulated with lemons or tamarinds, or other sour fruit, are very grateful to the patient, and may be given with freedom. The greatest luxury in which he can be indulged is ice, especially when the throat is quite painful, and it may be given liberally; though it should be in small pieces, not in large ones. It soothes the irritation of the throat, and lessens the source of constriction, which is sometimes very annoying.

Of the Treatment of Cases varying from the Typical.—The variations in the eruption do not require any treatment for themselves. Absence of the eruption is not a sufficient reason for resorting to very active measures to "bring it out." The physician should give careful attention to the condition of the urine, to the state of the nervous system, and of the throat, that he may be certain that there is no grave symptom in either of these directions. The immoderate use of hot teas, of steam baths, and of alcoholic drinks, do not seem to be called for, and they may add to the danger.

When the eruption, after being well out, suddenly disappears, careful inquiry should be made for the cause, and unusual diligence should

be used in ascertaining the condition of the internal organs. The reason for this is not that the repelled eruption is likely to attack these organs, but because the occasion of its sudden disappearance is exposure to cold, which it is probable may have excited at the same time some inflammation, as of the lungs or pleura, or peritoneum, which is liable to be overlooked. The distinction between this view of repelled eruptions and the popular one is highly important.

The sienna shade of the eruption does not require treatment in itself, but is of importance as showing that there is a depressed condition of the vital powers, and that it will probably be necessary to contend with some of the grave complications which arise in that state, as diphtheritis and nervous exhaustion. The diffusible stimulants, especially carbonate of ammonia, are to be used, attention being given to their effect upon the pulse, which ought to grow fuller and less frequent; and to the eruption, which ought to assume its more appropriate scarlet color. I repeat, that this shade of the eruption is an indication of importance only when noticed in the early stages, and not when the disease is abating.

When the variation is in the condition of the throat, the treatment is to be modified according to its character. If it be simply the formation of one or more ulcers upon the tonsils, the ulcerated surface should be wiped clean, and then touched with a solution of the *crystallized* nitrate of silver, containing from a scruple to a drachm of the salt to an ounce of water. A camel's-hair pencil or a sponge probang is the most convenient instrument to use in applying it.

If the variation consists in the attack of diphtheritis, the physician must be on the alert to detect the earliest symptoms of danger in the various directions in which it may be expected. But he must often be content to see his efforts fail to preserve the life of the patient, or even to defend any particular organ from destruction, however wise and skillful those efforts may be.

When the patient is extremely prostrated by the diphtheritis, it is necessary to resort at once to stimulants and food; the latter being given by injection, if, in consequence of the soreness of the throat, the patient is not willing to swallow it. To that given by the mouth a liberal quantity of pepper may be be added, both for its effect upon the throat locally, and the stimulating properties which it possesses. A pulse of increased but irregular frequence, and diminished strength and volume, are indicative of this prostration.

To the throat there should be applied, externally, some gently stimulating oil, as oil of origanum, diluted one half with sweet oil, and a

light bag of hops, thoroughly heated, and applied dry. My own experience leads me to prefer this to wet applications, as flannels wrung out of hot water,* which are great favorites with many; or to greasy pieces of the rind of pork, an application which I have frequently seen in use, but never could find that it did any good. Poultices are entirely out of the question.

Internally, the pharynx, and all the parts on which the diphtheritic membrane is apparent, should be touched with a solution of the crystallized nitrate of silver, (℈j. to ℥j. to ℨj. of water,) which is *not* a caustic; or with chloride of soda, (Labarraque's solution,) which is especially useful when there is any fœtor; or with hydrochloric acid. Prof. Trousseau gives a decided preference to the acid, but he says of its use, "this caustic is to be used with great prudence and precaution. In children, during the struggle to overcome their resistance, you may burn the tongue, the teeth, the internal walls of the mouth, and thus increase the evil, without cauterizing as it should be done. By holding the child properly, and opening his mouth by means of a spatula, you can sometimes obtain good results from these cauterizations, touching the diseased parts, twice a day for five or six days, with a camel's-hair pencil saturated in the acid." My preference is for the chloride of soda, the portion of it which is swallowed being beneficial rather than otherwise. Once or twice a day is usually sufficiently frequent to apply it.

But it is desirable to treat not only those parts of the pharynx which are in view, or may in any way be seen, but also those parts which are out of sight. The wall of the pharynx, which is concealed by the *velum palati*, is most directly reached by the sponge probang, passed up behind the velum. Not unfrequently, however, it is impossible to open the patient's mouth wide enough to do this, and in that case it is necessary to resort to injections through the nares, or to the use of powders, blown in through the same orifices. The powders used for this purpose are of tannin or of alum. To apply them, put the proper quantity in a tube, (a quill answers a pretty good purpose,) pass it along the floor of the nares to the fauces, and then blow the powder out, when it will of course spread itself upon the neighboring moist surfaces. Powders may be applied in the same way through the mouth. But injections are much better than the powders. The syringe used should have a long pipe,† which is to be passed along the

* Dr. Morris recommends the spongio-piline, which I should think might be the most agreeable of the *wet* applications.

† The best syringes for this purpose are made of vulcanized india rubber.

floor of the nares, and the fluid thrown into the pharynx, and not upward among the turbinated bones, unless the disease has extended to that surface. It is necessary to use for the injection substances which may be swallowed, and I therefore prefer the chloride of soda, though both tannin and alum, dissolved in water or glycerine, may be used. Dr. Clarke, in the paper before referred to, points out the importance of these injections for keeping open the Eustachian tube, the orifice of which, it will be at once seen, can be thus reached, and cleared by the current flowing over it. Simple water should be thrown in before using medicated injections, in order that the surfaces may be as well cleansed as possible, before any attempt is made to apply the remedy to them.

The treatment of the lesions of the ear, connected as they are with the throat affection, should be spoken of here. I cannot do better than to make free use of Dr. Clarke's paper, taking leave, at the same time, to suggest that it touches upon points too much neglected by the profession generally. Dr. C. says:

"The practitioner who has charge of scarlatina, measles, &c., should be on the lookout for the slightest otorrhœa or otalgia. The nurse, or other attendant, should be directed to watch the ears carefully, and to report to the physician the first sign of moisture about the orifices of the meatus. In like manner, any complaint of earache should be watched for, and reported, and the occurrence of one or both of these symptoms should be the signal for a careful inspection of the ears. It is not difficult to examine them, nor to recognize the existence of a morbid condition in them. The services of a specialist are no more necessary to do this than they are to recognize the existence of a pneumonia, or of a congested os uteri. By means of a speculum auris, and a good light, the condition of the meatus and of the membrana tympani can, in most cases, be satisfactorily ascertained. When a sunlight cannot be obtained, or the patient is too sick to be placed in a position which will enable the sun's rays (aided by a common mirror, used as a reflector,) to enter the meatus, an artificial light can be advantageously substituted; a lamp with a common reflector attached, which can be held so as to throw a strong light upon the patient's ear, will answer the purpose just as well as any of the expensive and complex lamps for the ear which have been invented, and a great deal better than most of them.

"It is not to be denied that there are many cases which do not admit of an examination when the ear is first attacked. The patient may be too sick to allow of its being done. The sides of the throat

and face may be so swollen as to nearly close the orifice of the meatus, and prevent any exploration; or the meatus itself may be tumefied, and tender, so as to forbid the necessary manipulations. But after making due allowance for all such cases, there remains a large number, doubtless a majority, in which an examination could be easily made, if the attending physician only felt the necessity of making it. Moreover, it is not generally the case that such an examination is demanded at the time when the constitutional disease is at its height. I have no statistical data by which to decide this point, but my impression, so far as I can recall the cases which have come under my observation, is, that in a large proportion of the cases of perforation following the exanthemata, the local affection does not begin till the acute stage of the constitutional disease has passed; and more than this, the local affection frequently does not appear till convalescence from the constitutional one is fully established. After the general affection has subsided, an exploration of the ear can always be readily made, and the extent of the local disease ascertained." * * * "The indications for treatment are:

"1st. To avert perforation by subduing local inflammation, altering the local morbid action, and keeping the Eustachian tube, and especially its pharyngeal orifice, open, so that all unhealthy secretions may find an easy egress out of the middle ear into the throat.

"2d. If perforation must take place, to make an artificial opening through the membrana tympani, for the discharge of whatever may be pent up in the cavity of the tympanum.

"3d. After perforation has taken place, whether artificially or spontaneously, to employ *immediately* all general and local means to bring about a healthy action of the middle ear.

"4th. To induce healing of the perforation, when this can be done, and thereby restore the membrane to its integrity."

The remaining important variation from typical cases is that in which the nervous system is the centre of attack, and the direction in which the scarlatinal poison seems especially to exert its energy. From the cases which I have quoted, it is evident that in many cases death is the speedy result of this attack, and that there is little opportunity to accomplish anything by treatment. Even when time is afforded for medication, it is in the majority of cases unsuccessful, for these cases are especially malignant and fatal.

Carbonate of ammonia as a stimulant, musk, castor, and camphor as nervines, to quiet the tossing, jactitation, and subsultus tendinum, are the drugs which are demanded; few, if any, others finding a place for

themselves. Wine whey, or brandy even, is often desirable to alternate with the ammonia, and this notwithstanding the heat of the skin. To the back of the neck a blister may be applied when coma approaches, though I must confess that I have rarely seen any benefit arising from the practice. The only remedy which is of much effect, and this often fails, is the application of water, either cold or warm, by *affusion*. This is Currie's suggestion, but it has fallen into neglect and oblivion, which it has not deserved. To reawaken the profession to its value, the endorsement of a distingnished name is necessary. For this reason, as well as that my own experience with it has been limited, I quote again from the learned Trousseau.

"How should this treatment be applied? The patient placed naked in an empty bath-tub; three or four pails of water, at a temperature of 20° Centigrade, (68° Fahrenheit,) are thrown over his body. This affusion lasts from a quarter of a minute to a minute at the longest. The patient is immediately enveloped in blankets, placed in bed without being wiped off, and properly covered; reaction generally follows in fifteen or twenty minutes. The affusions are repeated once or twice in the twenty-four hours, according to the severity of the symptoms. They should be administered at that moment when the nervous phenomena assume such an intensity as to excite our fears of imminent danger; they are to be repeated until these symptoms cease, relieving the mind of the physician from further cause of alarm.

"To suggest in private practice a treatment apparently so bold, one would need to have grown old in practice, to be beyond the necessity of being sustained by public opinion. He should be fortified by a deep sense of duty—by a consciousness of doing well, in order to strive successfully against the popular prejudice—of all prejudices, perhaps the most unfortunate—which demands that, in eruptive fevers, patients should have warm drinks, and be wrapped in more coverings than they are accustomed to in health. There is no prejudice, we say, which is more unfortunate than this; there is none which more frequently occasions the death of the patient. Yet the voice of Sydenham, which has spoken for two hundred years—the authority of the most distinguished physicians who still object to it, resist in vain.

"You understand, then, the difficulties which the young physician will have to encounter, who believes he should have recourse to these cold affusions. These difficulties are the greater, because it is in the severe cases, where the scarlatina threatens to be fatal, that the indications of this treatment are found. In adopting this treatment, you know that the disease gives one chance of recovery to two of death;

and you can foresee, if you are not successful, what will be the opinion of the family afflicted with the loss they have sustained.

"I have employed these affusions for a long time. I tried them in private practice before adopting them in hospital practice, for I have never made use of anything there which I had not previously tried in my private practice. As to these cold affusions, I can assure you that I have never used them without gaining some beneficial effect from them. I do not pretend to say that all my patients were cured. Far from it. I have lost a great many, but they died notwithstanding the treatment. The affusions, instead of being injurious, seemed to moderate the symptoms and retard the fatal termination. By acting in this way in private practice, my reputation ran great risks, and I have often been badly recompensed for doing what my profound convictions dictated; but I remained firm in my course which duty marked out for me, and I persist in it up to this hour, for a stronger reason than formerly; for now, my position being established, my responsibility does not influence me as much. I understand your fears—not that you doubt the advantages of the treatment, which you dare not adopt, but because, while consulting before all the interest of the sick intrusted to your care, you yet have to watch over your own reputation, which is so easily affected at the commencement of your career as practitioners. Still, when the voice of duty speaks to you, when your conscience tells you that this treatment, you dare not adopt because it is contrary to the prejudices of the world, is a useful treatment, it is still necessary to try it, it is right that you should do it. But then, instead of resisting this prejudice face to face, instead of taking the bull by the horns—if you will pardon me this vulgar expression—avoid the difficulty, by administering these useful cold affusions, leaving the patient, and especially the attendants, in the belief that the affusions are warm."

It remains to speak of the treatment of the sequelæ of scarlatina. With one exception, these can be dismissed by saying that they require the treatment which is demanded by the same diseases under other circumstances, modified by the condition in which the patient finds himself. No one should think of treating the pleurisy, pericarditis, or peritonitis of such patients by copious venesection, violent purgation, or other extremely active medication. A less heroic course produces very great effect, and too much energy of treatment is likely to prove fatal to the patient. Moderate leeching, cupping, or blistering, together with mild purgatives and alteratives, will be sufficient in a majority of cases. Accumulation of fluids in any of the serous cavi-

ties requires prompt attention, for the exhausted life-powers do not readily adapt themselves to bear this new burden. If diuretics will accomplish this, it is well; but where these fail, it may be necessary to resort at an early period to surgical aids. This is especially true of pleuritic effusions, which should be early removed by thoracentesis, if there are no marked signs of improvement.

The exception above made is in favor of anasarca, which requires active as well as prompt treatment. It has been said that this more frequently follows mild than severe cases of scarlatina, and it may be for this reason that active medication is better borne. Be that as it may, it is desirable to give at once a decided cathartic of calomel and rhubarb, followed by a dose of magnesia, to dry cup over the kidneys, (or if there is marked hæmaturia, wet cups should be used,) and in general to combat the acute nephritis. When this is allayed, the use of diuretics may be commenced; those being selected which do not contain elements which irritate the urinary organs. Digitalis and the nitrate of potash are therefore preferable to the class which may be represented by the juniper.

The general principles for the treatment of anasarca must, then, be our guides, and these it is not here necessary to recapitulate.

It will be observed that I have abstained from mentioning the classical divisions usually observed in treating of scarlatina; viz., S. simplex, S. anginosa, and S. maligna. I have done so because confusion frequently grows out of these divisions, and there is no advantage in them. The scarlatina is the same, whether there be a profuse eruption or none at all; whether diphtheritis complicates it or not; whether rheumatism or anasarca follows it, or recovery takes place without any sequela. There is, then, no reason for encumbering our books and our minds with these subdivisions, and I have observed their ill effects upon practitioners as well as students.

Many remedies of reputation have also been passed by in silence, either because they have ordinarily failed in my own hands, as well as in those of my professional acquaintances; or because, when I have not used them, I have judged that the evidence in their favor is insufficient to command my confidence. Of the latter class, the use of belladonna as a *remedy* (I have given my reasons for using it as a prophylactic) is one example; and the "successful treatment of scarlatina" by quinine is another. Of the former class, yeast given internally, and bacon-fat used externally, are illustrations. Both of these remedies have been carefully and conscientiously used by me; and both have uniformly failed when put to the test of severe cases. The

greasing over the surface with bacon-fat is a very filthy performance, and as great relief, I may even say greater, has, in my experience, been found by the frequent sponging with tepid water and vinegar. The yeast has been given with all the favor of prejudice in its behalf, but I am compelled to say that, in any case sufficiently grave to excite apprehensions in my mind as to the result, it has never been of any benefit to my patient.

It has been my fortune to contend with several severe epidemics of the graver forms of this disease, and to have had patients in families which have always appeared to be particularly susceptible to the deleterious influences of the scarlatinal poison, and I know that those who have been more fortunate in the epidemics which have occurred in their circles of practice, are not qualified to speak of the value of remedies, or to estimate the gravity of this disease as compared with others. To any one who may doubt my statement, and quote to me the opinion of Sydenham, that scarlatina scarcely deserves the name of a disease, I would oppose the experience of M. Bretonneau, as narrated by Trousseau in the admirable lecture to which I have so often referred.

"When I commenced my medical studies at Tours, M. Bretonneau told us that scarlatina, which his masters had always spoken of as a severe disease, had at first appeared to him as a very mild disease. He said that, from 1799 to 1822, at which time he made these remarks, he did not recollect to have seen a single person die of scarlatina, and he practiced for a long time in the country before he became physician-in-chief of the hospital at Tours. Since then he had seen numerous cases, both in hospital and private practice, and up to that time this exenthematous pyrexia was to him the mildest of all. But in 1824 an epidemic broke out in Tours and its vicinity. In less than two months, M. Bretonneau saw the sick die off with such a startling rapidity, that, opposed as he was to the doctrines of Broussais, then in high estimation, he blamed the treatment pursued by his confrères, who bled excessively, in order to moderate the angina and the inflammatory fever at the commencement of the attack; soon, coming himself in contact with the disease, he learned that he could not always strive against it successfully, a considerable number of his patients succumbing. Then, he who before 1824 had treated scarlatina so lightly, learned to class it with the plague, with typhus and cholera."